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(54) Title: USE OF STABLE GAS CELLS IN FOOD PRODUCTS

(57) Abstract

A food product selected from the group of low-fat spreads, dressings, cheese and sauces, comprising gas cells having a thermodynamic stability in excess of 2 weeks and more than 90 % by number of the gas cells having a particle size of less than 20 μm.

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Use of stable gas cells in food products

The present invention relates to the use of stable gas cells in food products, particularly in cheeses, low-fat spreads, dressings and sauces.

A problem encountered with many products containing gas cells is the stability with time: this is because a gas cell dispersion comprising large cells is vulnerable to creaming separation of the dispersion into discrete layers of different gas phase volume, the larger cells in the high gas phase volume layer will coalesce through film rupture, while the smaller gas cells, say under 100 μm, are unstable with time, due to disproportionation in favour of larger cells, and this is in particular true if the gas cells become finer.

It is known to incorporate gas cells in food products, for example in ice cream, whipped cream, butter-like fat spreads and mousse-type desserts. These products all have the above described problem in common, although that can be limited to an important extent by structuring, stabilising or immobilising the liquid forming the continuous phase or matrix. Examples thereof are disclosed in EP-A-0,285,198 where the continuous fat phase of a gas loaded plastic fat spread comprises sufficient solid fat at use and storage temperatures to prevent the above problems, and also in EP-A-0,274,348 according to which air is whipped into a pre-mix comprising sufficient structuring agents to result on cooling down into an immobilised continuous phase. These systems derive their stability from the continuous phase or matrix and not from the gas bubbles which are subject to the usual disproportioning rules, although retarded by the matrix containing structuring agents.

In EP-A-0,521,543 it has been described how to prepare stable gas cells for improving the brittleness in

confectionery, lightness in whipped cream, scoopability in ice cream, opacity in cosmetics, in creamed margarines for cake-baking or in egg-based aerated structures such as meringues or soufflés.

EP-A-0521543 describes gas cells dispersed in a continuous liquid medium in a stable condition, i.e. having a stability in excess of two weeks, generally independent of the character of the liquid medium, the gas cells having a measured D3,2 average diameter of less than 20 μm and the gas phase volume of which gas cells being in excess of 0.0001. Although the gas cells may appear in different embodiments in a characteristic appearance, the boundary surface, i.e. the surface separating the gas of each cell and the rest of the product, preferably is structured and comprising a multitude of adjacent domes. Specific stability is obtained if the great majority of the domes has hexagonal and some pentagonal outlines. Usually some irregularities, e.g. higher polygons are present amongst the dome structures. These polygons may be of very irregular shape.

Gas cells of a good stability with respect to creaming and disproportionation are obtained when the cells have diameters in the range from 0.1 to 20 μm, and more preferably from 0.5 to 3 μm. The expression "liquid medium" in this description and claims comprises any medium showing molecule mobility, i.e. including gels and viscous liquids.

EP-A-0,521,543 also provides a suitable method of preparing a multitude of gas cells in a liquid medium comprising whipping a liquid medium with a gas such that gas cells of the required dimension are formed while having a surface-active agent contained in that liquid medium for stabilising the gas cells. For obtaining the gas cells of the required dimensions, sufficient shear should be exerted

on the larger gas cells that are initially formed. Factors influencing this shear are the type of mixer or beater or whisk, the viscosity of the liquid medium and the temperature thereof.

In practice, a high shear mixer, e.g. a Kenwood Chef mixer, a colloid mill, a cake mixer, a cavity transfer mixer or a Silverson will be used. By increasing the viscosity and/or lowering the temperature of the liquid medium the size-reducing effect of the mixer on the gas cells is increased. If a Kenwood Chef mixer is used at room temperature, a suitable dynamic viscosity of the liquid medium is preferably from 0.1 Pa.s to 20 Pa.s although the range of from 0.2 to 0.4 Pa.s is preferred.

Having obtained the stable gas cells resembling a thick creamy foam, the cells are aged. Stable gas cells may then be separated from part of the liquid medium used for preparing the cells. Separation may be done by centrifuging or using a dialysis membrane after modifying the liquid phase of the gas cell suspension, such as by dilution with a miscible fluid.

Surprisingly, it has now been found that stable gas cells can advantageously be used in various food products such as low-fat spreads, (e.g. having a fat content of 0-60 wt%), dressings, i.e. spoonable or pourable dressings, and dressings of the mayonnaise-type, cheeses, e.g. processed cheese, hard or semi-hard cheese, sauces etc.

Within these food products, the stable gas cells may be used for various purposes, for example to improve visual appearance, organoleptic texture and creamy perception, for example as a fat-replacer, whitener and opacifier. A preferred use is as a fat-replacer ingredient.

Accordingly, the invention relates to a food product selected from the group of low-fat spreads, dressings, cheese and sauces, comprising gas cells having a thermodynamic stability in excess of 2 weeks and more than 90% by number of the gas cells having an average D3,2 particle size of less than 20 μm.

Usually, the gas cell number concentration in the product will be above 10^6 per ml, preferably above 10^7 per ml, with the number and the size selected to provide the desired benefit. Usually, the cell count is no more than 10^{11} per ml, preferably no more than 10^{10} per ml.

The particle size of more than 90% by number of the gas cells is less than 20 μm, more preferred to 0.1 to 10 μm, most preferred from 0.5 to 3 μm.

Gas cells for use in products of the invention have a stability in excess of 2 weeks, irrespective of the continuous phase or matrix. By this is meant that upon storage for 2 weeks at 4°C, more than 90% by number of the gas cells in the product still remain intact, irrespective of the condition of the continuous phase, e.g. both (very) low and (very) high viscosity. Especially preferred are products, wherein the stability of the gas cells is more than 4 weeks, most preferred more than 8 weeks.

The gas cells may be prepared from an edible surface-active material suitable for the making of gas cells with structured surfaces, for example mono-, di- or tri- long-chain fatty acid esters of sucrose, distearoyl- or dipalmitoyl phosphatidylcholine or mixtures thereof. Co-surfactants may be present in small quantities, e.g. free fatty acids or soaps.

If desired, any suitable thickener may be present in the system while forming the stable gas cells. Suitable

thickener materials are, for example, sugars, (hydroxy-alkyl) celluloses, hydrolysed starches etc.

For preparing food products containing the gas cells in accordance to the invention, it is preferred to prepare the gas cells in bulk separately and add these as an ingredient to the product, or it is possible to prepare the gas cells in the presence of one or more other ingredients of the composition.

Preferably, the gas cells are pre-prepared. A suitable method involves the preparation of an aqueous solution of the desired viscosity (for example by using a thickener material at a suitable level) and containing 0.1 to 20 wt% of edible surfactant(s). In this context it is believed to be within the ability of the skilled person to select those thickeners which will be capable of contributing to the desired viscosity of the aqueous solution. The selection of the surfactant is critical to the subsequent stability of the gas cells. It is restricted to those providing the surface characteristics typified by the examples given above. The aqueous solution is then whipped, preferably at high shear, until a system is formed wherein the average particle size of the gas cells is as desired. By taking the appropriate surfactant phase with water or other solutes at low levels, gas cells according to the invention may be manufactured without the use of a separate component to contribute to viscosity. Consequently, the invention also provides a method of manufacturing a gas-containing food product comprising mixing and processing the constituting ingredients and adding pre-prepared thermodynamically-stable gas cells dispersed in an aqueous medium.

I Dressings or mayonnaise

A first embodiment of the present invention relates to dressings containing stable gas cells. The preferred function of these gas cells in dressing or mayonnaise is as fat-replacer and/or as whitener and/or as opacifier.

Generally, dressings or mayonnaise are oil-in-water emulsions. The oil phase of the emulsion is generally 0 to 80% by weight of the products. For non-fat reduced products, the level of triglycerides is generally from 60-80%, more preferably from 65-75% by weight. For salad dressings the level of fat is generally from 10-60%, more preferably from 15 to 40%. Low- or no-fat containing dressings may, for example, contain triglyceride levels of 0, 5, 10 or 15% by weight.

Other fatty materials such as for example polyol fatty acids ester may be used as a replacement for part or all of the triglyceride materials.

In addition to the above-mentioned ingredients dressings in accordance with the present invention may optionally contain one or more of other ingredients which may suitably be incorporated into dressings and/or mayonnaise. Examples of these materials are emulsifiers, for example egg yolk or derivatives thereof, stabilisers, acidifiers, biopolymers, for example hydrolysed starches and/or gums or gelatin, bulking agents, flavours, colouring agents etc. The balance of the composition is water, which could advantageously be incorporated at levels of from 0.1-99.9%, more preferably 20-99%, most preferably 50 to 98% by weight.

II Low-fat spreads

Another preferred embodiment of the invention is the use of gas cells, generally specified in the above, in low-fat spreads. Especially preferred is their use in low-fat spreads as a fat replacer and/or whitener and/or opacifier.

Spreads according to the embodiment generally contain from less than 60% by weight of edible triglyceride materials. Suitable edible triglyceride materials are, for example, disclosed in Bailey's Industrial Oil and Fat Products, 1979. In spreads of reduced fat content the level of triglycerides will generally be from 30-60%, more generally from 35 to 45% by weight. In very low fat spreads the level of triglycerides will generally be from 0-40%, for example 30%, 25%, 20% or even 10% or about 0%. Other fatty materials, for example sucrose fatty acid polyesters may be used as a replacement of part or all of the triglyceride material.

In addition to the above-mentioned ingredients, spreads in accordance with the invention may optionally contain further ingredients suitable for use in spreads. Examples of these materials are gelling agents, sugar or other sweetener materials, EDTA, spices, salt, bulking agents, flavouring materials, colouring materials, proteins, acids etc. Particularly preferred is the incorporation of biopolymers in spreads. Suitable biopolymer materials are for example milk protein, gelatin, soy protein, xanthan gum, locust bean gum, hydrolysed starches (for example Paselli SA2 and N-oil), and microcrystalline cellulose.

The amount of biopolymer in spreads of the invention is dependent on the desired degree of gelling and the presence of other ingredients in the composition. Usually the amount of gelling agents lies between 0 and 30%, mostly between 0.1 and 25% based on the weight of the aqueous phase of the spread. If hydrolysed starches are present

their level is preferably from 5-20%; other gelling agents are generally used at levels of up to 10%, mostly 1-7%, most preferably 2-5% all percentages being based on the weight of the aqueous phase. Particularly preferred are combinations of say 5-15% hydrolysed starch and 0.5-5% of other gelling materials. Preferably the other gelling material includes gelatin.

The balance of the composition is generally water, which may be incorporated at levels of up to 99.9% by weight, more generally from 10 to 98%, preferably from 20 to 97% by weight. Spreads according to the invention may be fat and/or water continuous.

The gas cells can be used as a partial or entire replacement of the oil phase in the spread products.

III Cheese

Another preferred embodiment of the invention relates to the use of stable gas cells in cheese products, for example processed cheese or semi-hard cheese. Preferred uses for the gas cells in cheese products are as fat replacer and/or whitener and/or opacifier.

Cheese products in general often contain droplets of fat dispersed in a matrix, which is mainly structured by casein. For the purpose of the present invention the gas cells may preferably be used for replacing part or all of the dispersed fat phase.

In addition to the gas cells, cheese products of the invention may advantageously contain all types of ingredients which can be present in cheese products. Examples of these ingredients are milk protein (preferably present at a level of 0-15%, more preferably 0.5 to 10%), fat (preferably present at levels from 0-45%, more

preferably 1-30%); other fatty materials such as for example polyol fatty acid esters can replace all or part of the fat, electrolytes (for example $CaCl_2$ and/or NaCl at levels of 0 to 5%, more preferred 1-4%), rennet or rennin (for example at a level of 0.005 to 2%, more preferably 0.01-0.5%), flavours, colouring agents, emulsifiers, stabilisers, preservatives, pH-adjusting agents, biopolymers etc. The balance of the product is generally water which may be present at levels of for example 0-99.5%, more preferably 5-80%, most preferably 30-75% by weight).

The cheese products according to the present invention range from soft cheeses to hard cheeses of various types such as semi-hard cheeses (such as Gouda, Edam, Tilsit, Limburg, Lancashire etc.), hard cheeses (for example Cheddar, Gruyere, Parmesan), surface mould cheeses (e.g. Camembert and Brie), internal mould cheeses (e.g. Roquefort, Gorgonzola etc.), processed cheeses and soft cheeses (cottage cheese, cream cheese, Neufchatel etc.).

The cheese products of the invention may be prepared by any suitable process for the preparation of cheeses. Although this is dependent on the type of cheese, generally the following stages may be present: (1) mixing the ingredients at a suitable temperature, for example at 5-120°C; (2) after cooling, adding a starter culture, cutting the curd, moulding and eventual salting; and (3) ripening. As indicated above, the gas cells are preferably formed separately and added at a suitable point in the production of cheese. For hard cheeses, the gas cells are preferably added to the other ingredients in stage (2) after cooling or in stage (1) at a moderate temperature of, say, less than 50°C. For soft or processed cheeses, the gas cells may also conveniently be added in later stages, for example they may be mixed-in as the final stage in the cheese preparation.

Example 1 - Preparation of gas cells

An aqueous solution was prepared containing 70% by wt of maltodextrin 63DE (thickener) and 2% by wt of sucrose mono stearate ester (edible surfactant). Using a Kenwood chef mixer this solution was whipped with air for 1 hour at speed 5. A thick creamy foam resulted.

This foam consisted of minute gas cells and showed an air phase volume of 60 volume %; the great majority of the gas cells has a diameter of the order of 2 μm and below. On standing for 40 days, little visible change had occurred.

The gas cells prepared could be diluted 1000 times with water, resulting in a white milky liquid. The same result was obtained on 1000 times dilution with a 30% by wt aqueous maltodextrin 63DE solution. Though no longer suspended/dispersed in a thick viscous aqueous liquid, the gas cells with diameters less than 5-10 μm remained in suspension, although with some creaming. This creaming could be reversed by simple stirring or swirling. No significant change took place over 20 days.

Even though some flocculation of cells occurred over extended times (normally greater than several days depending on ionic concentration), the cells as such remained essentially stable with respect to disproportionation. Flocculation did, however, cause an increase in the rate of creaming of the gas cell suspension. When not flocculated, the cells smaller than 10 μm can be seen to be strongly under the influence of Brownian motion, showing that the stability of these cells does not result from the cells being constrained in a rigid matrix. The gas cells could be concentrated again to a gas phase volume of 40% by centrifuging the diluted liquid in a centrifuge at a speed of 2500 rpm for 5 minutes. As expected the rate of concentration of the gas cells by

centrifugation could be manipulated by varying the viscosity of the suspending phase and by the magnitude of the applied gravitational force.

The results were as follows (Coulter counter):

Phase volume ø0.1

size μm	vol. %	population (thousands)
<1.00	9.5	75
1.25	16.2	65.1
1.58	24.3	51.3
1.99	23.9	28.2
2.51	13.6	8.1
3.16	6.0	1.8
3.98	3.1	0.5
5.02	1.5	0.1
6.32	0.3	0
7.96	0.2	0
10.03	0.6	0
12.64	0.1	0
15.93	0	0
		Total 230

An amount of the original gas cells was diluted with distilled water to an air phase volume of 0.05 and dialysed against distilled water overnight to reduce the maltodextrin in the liquid phase.

After suitable dilution, the following data were obtained for gas cell sizes and size distribution using a Malvern Zetasizer.

gas cell size class nm	relative number of gas cells %
below 353.9	0.0
353.9- 414.6	0.8
414.6- 490.4	4.7
490.4- 577.2	10.8
577.2- 679.3	19.1
679.3- 799.6	27.7
799.6- 941.2	20.2
941.2-1107.8	10.8
1107.8-1303.9	4.7
1303.9-1534.8	1.1
over 1534.8	0

Example 2 - Gas cell production

An aqueous solution containing 1.5% (w/w) hydroxyethylcellulose and 6% (w/w) sucrose ester, S-1670 Ryoto Sugar Ester ex Mitsubishi Kasei Food Corporation, which is a mixture of predominantly sucrose mono- and distearates was aerated in the bowl of a planetary mixer using a fine wire whisk. After 30 minutes, the concentration of sucrose esters was increased by 2% by the addition of a more concentrated aqueous solution (25% w/w). Subsequent identical additions were made during whipping at 10-minute intervals until the sucrose ester concentration reached 12% w/w on the total. The overall viscosity of the aerated matrix was maintained approximately constant by the addition of an appropriate amount of water. Optionally gas cell suspensions prepared in this manner could be processed through a colloid mill to quickly remove the larger gas cells.

Two gas cell suspensions so formed were allowed to stand for 1 hour and subsequently for 1 day. After 100-fold

dilutions of both samples no change could be recorded over time in the gas cell size distribution as measured by light microscopy. Observed in this was that gas microcells had typical diameters in the range 1-10 μm. By light microscopy the microcells could be seen to be freely mobile both in the flowing liquid on the microscope slide and to be moving under the influence of Brownian motion. By increasing the surfactant concentration in this way, an increased proportion of gas microcells relative to larger cells could be formed. After dilution to a viscosity which allowed removal of cells larger than the require size (in this case 20 μm) and separation by creaming, the gas cell suspension had a phase volume of gas of 0.4 and contained in the region of 10^9 cells per ml. If required, excess surfactant could be removed by dialysis.

Gas microcells prepared in this way could be mixed with solutions containing a gelling or a viscosity-imparting agent with appropriate yield strength properties to produce a suspension of known phase volume which is substantially stable to creaming of the cells. With suitable microbiological precautions, the gas cell suspension remained unchanged over a period of many weeks.

Example 3

Gas microcells have been prepared using a mixture of two types of surfactants having different head group sizes but the same or very similar saturated hydrophobic chains. This example illustrates that microcells of substantial stability can be prepared by the addition of various amounts of co-surfactant(s). The sample was prepared by the procedure of Example 1 but from a composition of surfactants of sucrose ester (1.3 w/v) and stearic acid (0.07% w/v). In such microcells, the regular pattern is disturbed. Whilst the cell surface remains curved and

separated into domains these are no longer regular. An otherwise identical preparation, but this time containing 1.3% w/v sucrose ester and 0.7% stearic acid, produced gas microcells containing essentially smooth surfaces with only a few lines or discontinuities separating the curved surfaces. Many cells showed no separate regions. After aging for 13 days and separation of the microcells by 10 times dilution and removal of the larger cells by creaming, the microcells, in two separate determinations of size distribution gave a D3,2 of 1.19 and 1.25 μm for the dispersion. Microcells in these examples showed stability characteristics analogous to those microcells described above.

Example 4

Defatted and fully hydrogenated phosphatidylcholine (PC) (98% pure and containing 1% lysophosphatidylcholine plus other phospholipids as impurities (Emulmetic 950 ex Lucas Meyer)) was used in a small scale preparation of gas microcells. 0.5 g PC was heated to 65°C in 10 g 60% maltodextrin solution. A homogenous dispersion was prepared by stirring whilst controlling the temperature for 1 hour. Further dispersion using an ultrasonic probe was used in a second run with similar results. The suspension was aerated at room temperature for 1 hour, using a microscale whipping apparatus comprising a cage of stainless steel wires driven by a variable speed motor. A phase volume of typically 0.7 was obtained in the initial aeration step. After aging for 24 hours, the foam comprising microcells could be stripped of the larger cells by creaming. The microcells, when viewed by transmission electron microscopy, had surfaces characterised by the presence of waves or wrinkles and frequently deviated substantially from an overall spherical. Cells in the

range of 1-20 μm could be harvested by standard separation techniques.

Example 5

A liquid medium containing 87.5 wt% Sweetose (thickener, mainly glucose ex Ragus), 2 wt% sugar ester (S-1670 Ryoto sugar ester ex Mitsubishi) and water was prepared by preheating and homogenising the water and the sugar ester at 90°C and mixing this with the Sweetose which has been preheated to 60°C. The mixture was cooled and whipped in a Howard mixer until the air volume was stabilised at 40% by volume. This suspension was aged. Large cells were removed by gentle stirring. Gas cells of the required size (less than 20 μm) were harvested by standard separation techniques.

Example 6

A dressing was prepared by mixing 0.13 wt% potassium sorbate and 3.5 wt% of agar into de-ionised water at 60°C. The pH is adjusted to 4.0 with lactic acid. The product is cooled with shearing.

The standard base mix thus obtained was mixed with the gas cell suspension of example 5 in weight ratios of 10:1, 20:1 and 100:1 in a Silverson mixer without screens. The samples were stored at 4°C. The samples showed an improved whiteness as compared to the product without gas cells. The improved whiteness remained clearly visible after long periods of storage.

Example 7

A low-calorie pourable dressing can be made using the following ingredients:

gas cells in liquid medium	33.5%
water phase:	
water	31 %
sugar	15 %
salt	1.4%
cider vinegar (5% acetic acid)	13 %
tomato paste (ex Del Monte, double concentrated)	3 %
flavours	1.5%
biopolymeric thickeners	0.5%
potassium sorbate	0.1%
sunflower seed oil	1 %

The gas cells in liquid medium are as in example 2 (40% air cells; 10^9 cells per ml). The water phase is made by dissolving the water phase ingredients in a water-jacketed vessel with gentle stirring. The water phase with a throughput of 4 kg/h is combined with the gas cells in a bowl mixer and stirred at 10 rpm at 5°C until a homogenous mixture is obtained.

Example 8

A split stream zero-fat product containing biopolymers can be made, using the following ingredients:

A liquid medium with stable gas cells is prepared as in example 4.

In a water-jacketed vessel, the following ingredients are mixed:

Tap water	87%
Gelatin (acid, 250 bloom, ex PB)	4%
Paselli-SA2 (ex AVEBE)	8%
Salt	1%
CWS-β-carotene	trace

This phase is first processed, using a high shear Votator A-unit, after which the gas cell phase is mixed in a mixing bowl at 10 rpm and 5°C. The final product consists of 25% of the gas cell phase and of 75% of the biopolymer phase.

Example 9

A low-fat imitation Mozzarella is prepared from the following ingredients:

20%	gas cell phase (of example 5)
26%	Ca-caseinate
10%	Palm oil
4.3%	Na-caseinate
1%	Tricalcium phosphate
0.6%	Lactic acid
0.1%	Sorbic acid
0.2%	flavour
balance	water

All ingredients are mixed in a mixing bowl at 10 rpm at 50°C. The product has good body and taste comparable to a 20% fat imitation Mozzarella reference.

Claims

1. A food product selected from the group of low-fat spreads, dressings, cheese and sauces, comprising gas cells having a thermodynamic stability in excess of 2 weeks and more than 90% by number of the gas cells having an average D3,2 particle size of less than 20 μm.

2. A food product according to claim 1, wherein more than 90% by number of the gas cells have a particle size of from 0.1 to 10 μm, more preferably 0.5 to 3 μm.

3. A food product according to claim 1 or 2, wherein the gas cell number concentration in the product is above 10^6 per ml, preferably above 10^7 per ml.

4. A food product according to claims 1-3, wherein the gas cells have a surface comprising edible surface-active materials.

5. A food product according to claim 4, wherein the edible surface-active materials comprise surfactants selected from the group of mono-, di- or tri- long-chain fatty acid esters of sucrose, distearoyl or diplamitoyl phosphatidylcholine or mixtures thereof.

6. A method of manufacturing a gas-containing food product comprising mixing and processing the constituting ingredients and adding pre-prepared thermodynamically stable gas cells dispersed in an aqueous medium.

INTERNATIONAL SEARCH REPORT

Int. ional Application No
PCT/EP 93/03372

A. CLASSIFICATION OF SUBJECT MATTER
IPC 5 A23P1/16

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 5 A23P A23C A23L A23D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	FR,A,2 067 293 (MARGARINBOLAGET) 20 August 1971 see claims 1-7,27 see page 1, line 1 - page 2, line 14 see page 4, line 14 - line 21 see page 4, line 27 - line 31 see page 6, line 24 - line 31 see examples ---	1,2,4
A	EP,A,0 285 198 (UNILEVER) 5 October 1988 cited in the application see claims 1,5 see page 3, line 41 - line 44 see page 4, line 30 - line 36 see examples 1,5 --- -/--	1,4,5

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

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28 February 1994	04. 03. 94

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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